

STORAGE

FAQ

Q Can I buy Microsoft's new Windows Home Server operating system to install on my existing server?

A Microsoft is not currently selling Windows Home Server as a boxed retail product, preferring instead to sell it to computer manufacturers, who will then resell it pre-installed on new servers.

OEM copies of Windows Home Server are available for purchase online for around £100. Microsoft doesn't provide any technical support for OEM software, though, as the manufacturer of the hardware on which it's installed is supposed to provide this.

You can find the minimum system requirements necessary to run Windows Home Server, as well as a purchasable demo, at www.microsoft.com/windows/products/winfamily/windowshomeserver/eval.msp

Windows Home Server is based on Windows Server 2003, so make sure Server 2003-compatible drivers are available for your server's various components before you buy.

Alan Lu

PC systems and storage expert

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SYNOLOGY DiskStation DS-207+

★★★★

£204 inc VAT
From www.scan.co.uk

Synology's Disk Station DS-207+ is a Network Attached Storage (NAS) device that allows you to share your files with any computer on your network. You have to add your own hard disks, but the DS-207+ can accommodate two SATA disks, which you can configure as a RAID array.

The DS-207+ is attractive and compact, but there's no room for disk trays. Instead, you have to slide off the plastic cover, use a screwdriver to fix the hard disks in place and connect SATA data and power cables between the disks and the circuit board. This process is more time consuming than it should be.

When configured as a RAID 0 array, Windows sees the two disks as a single large drive, but if a disk should fail, you will lose all your data. As a RAID 1 array, only half the total capacity of the two disks is available for use, but a copy of your data is automatically maintained on the second disk.

The graphs below show the speeds attained by the DS-207+ with the disks in a RAID 0 configuration. We were pleasantly surprised by the fast transfer speeds for large files, but small files performance is sluggish. The large files test was slower with the disks configured as a RAID 1 array, copying files at 16.03MB/s, but a little faster in our small files test, at 1.69MB/s.

The DS-207+ has plenty of extra features. It worked well as an iTunes server, but while it should be able to play music from an iPod plugged into one of its three USB ports, it didn't recognise either a FAT32 or HFS+ formatted iPod. You can also play music through a web interface, but this is clumsy and has



few advantages over using the DS-207+ as a UPnP server with Windows Media Player.

Standard DivX clips stored on the DS-207+ played smoothly on both a PC and a network media player. It struggled a bit with large video files, though. There were some dropped frames when changing chapters in a DVD movie, and the audio in a high-definition WMV file occasionally fell out of sync with the video, though performance will depend on your network.

We had no trouble printing to a USB printer or sharing a USB disk connected to the DS-207+. The DiskStation can also be used to download files from the web or over Bittorrent when your PC is off, saving electricity. Plus, you can use it as a webserver; it

supports MySQL and PHP. Less usefully, the DS-207+ can also be used as a photo server, but it offers little advantage over websites such as Flickr unless you're paranoid about uploading personal photos to someone else's server.

We were impressed with the DS-207+'s performance with large files, but it is slow at copying small files, so using it for a system backup could prove frustrating. The DS-207+ is expensive for a NAS kit without any disks. It has some useful extras, but some are superfluous so make sure you need them before you buy.

Alan Lu

SUMMARY

- ✓ Fast large-files performance
- ✓ Web, FTP, print and media servers
- ✗ Slow small-files performance

NETWORK ATTACHED STORAGE

ENCLOSURE 10/100/1,000Mbit/s network connection, three USB ports, eSATA port, UPnP media server, FTP server, iTunes server, web server, takes two 3½in SATA hard disks

PART CODE DS-207+
DETAILS www.synology.com

PERFORMANCE

(see www.computershopper.co.uk/howwetest)



Also consider...

COOLER MASTER X Craft 360

★★★★★

£33 inc VAT
From www.yoyotech.co.uk



We tested Cooler Master's X Craft 360 disk enclosure with a 320GB Samsung hard disk. Apart

from copying large files over eSATA, its performance over both USB and eSATA was in line with our expectations. It's a little noisier than other eSATA enclosures, though. Installing a disk inside the X Craft was effortless since it doesn't require a screwdriver. This alone makes it a useful product.



3½in HARD DISK ENCLOSURE
Takes one 3½in SATA hard disk, eSATA, USB Hi-Speed interface
PART CODE RX-360
DETAILS www.coolermaster.com
FULL REVIEW Dec 2007



LACIE d2 eSATA II 3Gbits Hard Drive 500GB

★★★★★

£96 inc VAT
From www.it247.com

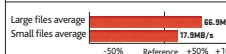
PRICE CUT!

LaCie's d2 external hard disk has a reassuringly heavy metallic case but is unusual in having other interface besides eSATA. Its excellent performance almost matched that of an internal SATA II disk, so it's much faster than any USB or FireWire 400 disk, and quicker than most FireWire 800 disks.

The d2 is a very fast external hard disk and shows the speed benefits of eSATA.



EXTERNAL HARD DISK 500GB capacity, 465GB formatted capacity (NTFS), eSATA
PART CODE 300976EK
DETAILS www.lacie.com/uk
FULL REVIEW Sep 2007



MEMOREX

Ultra TravelDrive 80GB

★★★★

£50 inc VAT

From www.lambda-tek.com/componentshop

The 80GB Ultra TravelDrive is the first portable USB hard disk we've seen from Memorex, a company that's better known for making blank CDs and DVDs.

The TravelDrive's grey plastic panels can be detached and replaced, like the fascias found on older mobile phones. Substitute faceplates in white and metallic orange are included, although neither colour complements the case's fixed grey rubberised grips. Removing the covers requires some force, but they don't feel particularly sturdy.

Thankfully, the TravelDrive didn't disappoint us in our file-copying tests. It's fast for a portable USB hard disk, managing 22.85MB/s overall in our large files tests and an average of 9.57MB/s in our small files tests. A USB-to-5V cable is included in case your computer can't provide enough power to the TravelDrive over a single USB cable.

Memorex bundles its own TotalMedia Backup software with the TravelDrive. It can back up your files according to a schedule, and can save time on subsequent backups by copying only those files that have changed since your last backup. However, it can't keep older versions of your files in case you change or delete a file you wish you hadn't.

A button mounted on the top of the TravelDrive launches the TotalMedia software, but it doesn't start backing up automatically – you still have to initiate a backup manually. This is because it's a portable drive and may not always be connected to your PC. You should bear this in mind before you use the schedule function. Unfortunately, you can't set the button to launch a different backup program.

The 80GB Ultra TravelDrive is expensive at 68p per gigabyte. Buffalo's 120GB MiniStation TurboUSB portable hard disk is faster and more spacious but it costs only £15 more.

Alan Lu

SUMMARY

- ✓ Good performance
- ✓ Comes with backup software
- ✗ High cost per gigabyte

PORTABLE EXTERNAL HARD DISK 80GB capacity, 74GB formatted capacity (NTFS), USB Hi-Speed interface, bus powered
PART CODE 32702080
DETAILS www.memorex.com

PERFORMANCE

(see www.computershopper.co.uk/howwetest)

DATA ROBOTICS

Drobo

★★★★

£353 inc VAT

From www.misco.co.uk

RAID arrays allow you to use multiple hard disks as if they were a single large disk, or to mirror the contents of one disk on another automatically, providing protection against hardware failure. RAID can be tricky and time-consuming to configure though (see *Upgrade Workshop*, *Shopper* 225).

The Drobo is an easy-to-use alternative to an external RAID enclosure, and it connects to your computer through a USB port. The Drobo can accommodate up to four SATA hard disks, which Windows will recognise as a single drive. When you add a disk to the Drobo, the total amount of available storage grows automatically and immediately without any manual configuration. Unlike a RAID setup, the disks don't have to be of the same size, and you can simply slide them into each drive bay without any need for trays or other mounts.

If the Drobo starts to run low on storage space, a red indicator light next to the smallest disk starts to blink, so you know which one to replace. If you want to replace it with a larger disk, or if a single disk fails, all your data is preserved and will be copied to the replacement disk once it's inserted. Around a third of the total combined capacity of your hard disks is reserved for this data-protection feature.

Unfortunately, the Drobo's performance in all our file transfer tests was disappointing. It was particularly slow at copying small files, as our results below show. Its performance is comparable to that of a RAID 5 enclosure but it's noticeably slower than a standard external USB hard disk.

The Drobo's disk management technology is impressively clever and is easier to configure than RAID. However, it's very expensive at £353 when you consider that it doesn't include any hard disks. We'd recommend that you opt for a standard USB hard disk with the capacity you need instead.

Alan Lu

SUMMARY

- ✓ Clever disk management
- ✗ Disappointing performance
- ✗ Expensive

EXTERNAL MULTIPLE HARD DISK ENCLOSURE Takes four 3.5in SATA hard disks, USB Hi-Speed interface
DETAILS www.drobo.com

PERFORMANCE

(see www.computershopper.co.uk/howwetest)

SEAGATE

Barracuda 7200.10
Ultra ATA/100
500-GB Hard Drive

★★★★★

£78 inc VAT

From www.ebuyer.com

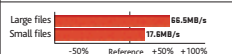
PRICE CUT!



If you need a high-capacity hard disk for your files but your PC's motherboard lacks a SATA port, Seagate's PATA 500GB Barracuda 7200.10 is ideal. It is excellent value with a low cost per gigabyte of 16p. It's also very quick.

This is the best PATA drive we have reviewed.

3½in INTERNAL HARD DISK 500GB capacity, 465GB formatted capacity (NTFS), PATA interface, 7,200rpm spindle speed PART CODE ST3500630A
DETAILS www.seagate.com
FULL REVIEW Jul 2007



SAMSUNG

SpinPoint
T166-HD501LJ

★★★★★

£60 inc VAT

From www.lambda-tek.com/componentshop

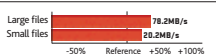
PRICE CUT!



Samsung's 500GB SATA hard disk is a

great choice if you need more space for programs, movies, music, photos and documents. It costs just 12p per gigabyte, but it's the fastest 7,200rpm SATA internal hard disk we've seen so far. It's an amazingly quick drive and great value, too.

3½in INTERNAL HARD DISK 500GB capacity, 465GB formatted capacity (NTFS), SATA 300 interface, 7,200rpm spindle speed, 16MB cache PART CODE HD501LJ
DETAILS www.samsung.com
FULL REVIEW Jul 2007

WESTERN DIGITAL
Scorpio 250GB

★★★★★

£87 inc VAT

From www.lambda-tek.com/componentshop

PRICE CUT!



Western Digital's 250GB Scorpio is the roomiest laptop disk yet, rivaling the capacity of some desktop disks. It is also one of the fastest 2½in hard disks we've seen and, what's more, it didn't reduce the battery life of our laptop, unlike some other 2½in disks.

It all adds up to the best laptop hard disk we've seen, although it won't fit older notebooks since it uses a SATA rather than a PATA connection.

2½in INTERNAL HARD DISK 250GB capacity, 232GB formatted capacity (NTFS), SATA interface, 5,400rpm spindle speed PART CODE 3384-5628
DETAILS www.westerndigital.com
FULL REVIEW Jan 2008



ZOOSTORM

Silenced Windows Home Server

★★★★

£400 inc VAT

From www.pcnextday.co.uk

Network Attached Storage (NAS) devices are the obvious way of adding storage to your network, providing a central repository for all your files that can be accessed from any computer on your network. An alternative is a computer specifically designed for network storage – in effect, a server – running Microsoft's new Windows Home Server (WHS) operating system. The Zoostorm is the first server we've seen with WHS pre-installed, and it comes with two 500GB hard disks, providing a generous 1TB of network storage.

WHS is designed specifically for network storage tasks and is based on Windows Server 2003. You configure WHS by plugging a keyboard, mouse and monitor directly into the Zoostorm and using the familiar – albeit modified – Windows XP interface.

More conveniently, you can also configure WHS over your network from another computer using the WHS Connector software or the Remote Desktop Connection utility in Windows XP Professional, Vista Business and Vista Ultimate. WHS Connector's simple setup wizard guides you through the process of setting up your first user account and the shared folders in which your data is stored. Usefully, it forces you to choose difficult-to-guess passwords consisting of numerals and lower- and upper-case letters.

The main WHS Connector window is divided into a series of tabs for managing backups of your networked computers, creating and managing user accounts and shared folders, and displaying information about the available disk space in your server. Other options are available from a Settings dialog box. It's much better organised than the interfaces of many of the NAS devices we've seen.

It's possible to access files stored on the Zoostorm from across the internet using a web browser. WHS will try to alter the appropriate router settings automatically if your router supports Universal Plug and Play (UPnP) port forwarding; otherwise you'll have to configure it manually. You don't need a static IP address or to use a dynamic DNS service to access your files remotely, as WHS can provide a free web address for your server.

WHS automatically enables folder duplication for each of your shared folders by default. This feature is similar to having a RAID 1 array, as it automatically mirrors your data on the second disk to preserve it in the event of a disk failure. It's more flexible than RAID, though, as you can enable it on a folder-by-folder basis, but it doesn't have any of the other potential benefits of RAID, such as increased performance.



Although the Zoostorm is compact and quiet, it is housed in a media centre-style case. This unusual choice means that it has superfluous ports for a server, such as SCART and surround sound outputs. More seriously, there's no extra space inside the case for adding more hard disks. Replacing an existing disk with a larger one is harder than it should be since you have to remove the DVD writer to get to them.

It's possible to plug a USB printer into the Zoostorm to enable other PCs on the network to share it, but if it's not automatically recognised you may have to install Server 2003-compatible printer drivers using a directly connected mouse and keyboard or using Remote Desktop Connection.

It's also possible to use the Zoostorm as a UPnP media server, but while music played back smoothly over our network, video was unwatchable, as the audio and video often fell out of sync. This is not surprising given the server's performance in our file copying tests. It is very slow compared with other servers and NAS devices we've seen, so copying significant amounts of data to and from the Zoostorm will be frustrating.

The Windows Home Server operating system is well-designed, but the Zoostorm's poor performance and inappropriately designed case let it down. For £400, the Zoostorm is not great value.

Alan Lu

SUMMARY

- ✓ Windows Home Server installed
- ✗ Poorly designed case
- ✗ Slow file-copying performance

HEADLESS HOME SERVER 3.2GHz Intel Celeron D 352 processor, 512MB RAM, 2x 500GB hard disks, Intel GMA 950 graphics
PART CODE 3390-1010
DETAILS www.pcnextday.co.uk

PERFORMANCE (see www.computershopper.co.uk/howwetest)



Also consider...

LITEON LH-20A1H

★★★★★

£29 inc VAT

From www.scan.co.uk

LiteOn's LH-20A1H DVD writer didn't top the charts in any of our tests, but it was still consistently fast at writing discs. The LH-20A1H strikes the right balance between price, bundled software and performance. As it comes bundled with Nero Recode, which can fit a two-layer DVD movie on to cheaper single-layer discs, it's a great-value DVD writer.



INTERNAL DVD WRITER 20X DVD-R, 20X DVD+R, 6X DVD-RW, 8X DVD+RW, 8X DVD-R DL, 8X DVD+R DL, 12X DVD-RAM, 48X CD-R, 32X CD-RW
PART CODE LH-20A1H
DETAILS www.litenonit.eu
FULL REVIEW Feb 2008



SAMSUNG Super-WriteMaster SE-S204

★★★★★

£35 inc VAT

From www.lambda-tek.com/componentshop

PRICE CUT!



BEST BUY Samsung's Super-WriteMaster SE-S204 is one of the fastest external DVD burners when writing DVD+R DL and DVD-R DL discs, with speeds of 7.56X and 7.51X.

It achieved 11X speeds in our DVD-R test and over 10X when burning DVD+R discs.

Samsung provides a good software bundle, too.

EXTERNAL DVD WRITER 20X DVD-R, 20X DVD+R, 6X DVD-RW, 8X DVD+RW, 12X DVD-R DL, 16X DVD+R DL, 12X DVD-RAM, 48X CD-R, 32X CD-RW
PART CODE SE-S204
DETAILS www.samsung-oms-europe.com
FULL REVIEW Feb 2008



BUFFALO DriveStation TurboUSB 500GB

★★★★★

£76 inc VAT

From www.digital-fusion.co.uk

PRICE CUT!



Buffalo claims that its 500GB DriveStation TurboUSB external hard disk is up to 37 per cent faster than other USB disks. In our tests, TurboUSB mode led to an increase of around 20 per cent over standard USB speeds when copying large files. While, it was no faster at copying small files, it's still a great performer and is cheap at only 19p per gigabyte.

DESKTOP EXTERNAL HARD DISK 500GB capacity, 465GB formatted capacity (NTFS), USB Hi-Speed interface
PART CODE HD-H5500U2
DETAILS www.buffalo-technology.com
FULL REVIEW Feb 2008

